43. (New) The device of claim 41 wherein the housing is composed of anisotropic boron nitride.

44. (New) The device of claim 41 wherein the housing is composed of pyrolytic boron nitride.

45. (New) The device of claim 41 wherein the composite structure is operative to produce x-ray radiation.

46. (New) The device of claim 41 wherein the housing is transmissive to x-rays.

Remarks

This Preliminary Amendment cancels claim 1 and adds new claims 31-46. The specification is amended in order to be consistent with the amended claims. No new matter is added by these amendments. The amendments are supported in the original specification, claims, drawings and incorporated references. Specific locations that support the amendments are set forth below. The amendments may further be supported at other locations within the original specification, claims, drawings, and incorporated references that are not set forth below. Claims 31-46 are pending.

At page 11, the specification is amended to mention that isotropic boron nitride and anisotropic boron nitride may be included in the wall of the vacuum chamber 36. Claims 42 and 43 describe a housing composed of isotropic and anisotropic boron nitride, respectively. These amendments are supported by incorporated material. The present application incorporates application serial no. 08/701,764, entitled, X-RAY CATHETER and filed August 22, 1996. The entire contents of this application are incorporated by reference at page 1, lines 6-10 of the original application and at page 7, line 27 of the amended continuation application. Application serial no. 08/701,764 in turn incorporates *Matsuda et al.*, SYNTHESIS AND STRUCTURE OF CHEMICALLY VAPOUR-DEPOSITED BORON NITRIDE, Journal of Material Science, 21(1986), pp. 649-658. *Matsuda* describes how to synthesis boron nitride, and is incorporated for providing instruction in the synthesis of the housing of the present invention. On page 651 in the second full paragraph, *Matsuda* describes how isotropic and anisotropic boron nitride may be formed. Also on page 651, *Matsuda* discusses the x-ray transparent properties of different types

of boron nitride in reference to Fig. 4. Page 651 of *Matsuda* therefore provides support for the amendment to page 11 that lists isotropic boron nitride and anisotropic boron nitride as suitable materials for the housing because they are transparent to x-rays.

Claim 31 describes a transmissive device comprising a catheter with a lumen and a flexible coaxial cable. The original specification at page 6, lines 12–15 describes a device for delivering, or transmitting, x-ray radiation, thereby supporting the claim to a transmissive device. Page 7, line 29 describes a catheter shaft. Page 8, line 22 and Page 9, lines 7–9 set forth a coaxial cable which is flexible. Page 8, lines 9–11 further specifies that the outer diameter of the coaxial cable may be 3 mm or less. Claim 31 further specifies that the cable may conduct a voltage greater than or equal to 10 kilovolts. Page 9, line 19 describes that the coaxial cable for the present invention may conduct voltages as high as 75–100 kilovolts, thereby supporting the limitation of voltage of at least 10 kilovolts. The requirement that the cable conduct the voltage without electrical discharge is set forth at page 6, line 28 through page 7, line 1.

Claim 32 requires a biocompatible coating. The original specification sets forth the biocompatible coating at page 12, lines 8–9.

Claim 33 sets forth that the coaxial cable is capable of delivering a direct current voltage, which is described at page 9, lines 17–19 of the original specification.

Claims 34–36 describe that the cable is connected to a unit requiring a voltage of greater than or equal to 10 kilovolts, 20 kilovolts and 30 kilovolts. These claims are supported in the original specification by the description of the x-ray device requiring an electrical field greater than or equal to about 20 keV/micron in order to emit electrons.

Claim 37 describes a device with a maximum diameter of 3 mm, which is supported at page 9, lines 5–7.

Claim 38 requires a device with a maximum diameter of 2.5 mm, supported at page 8, lines 18–20.

Claim 39 requires a device with a maximum diameter of 1.25 mm, supported at claim 13, and at page 19, lines 2–4.

The support in the specification for claim 31 described above is equally applicable to the method claim 40.

Claim 41 describes a connector, which is supported in the original specification by the description of a catheter shaft that guides the x-ray device to the treatment site and connects the x-ray emitter to the voltage source, as described at page 7, line 28 through page 8, line 9. Claim

41 further describes a composite structure including a housing, cathode and anode. Claim 1 as originally filed provides support for this composite structure because it describes a structure with a housing, a cathode and an anode. The housing is described as being composed of boron nitride at page 11, lines 20-22, as claimed in new claim 41.

Claim 44 describes a housing composed of pyrolytic boron nitride, supported at page 11, lines 20–22.

Claim 45 describes a composite structure which is operative to produce x-ray radiation, and is supported by claim 2 of the original claims.

Claim 46 requires the housing to be transmissive to x-rays, as is described at page 11, lines 18–20.

Applicants respectfully request that claims 31–46 be examined and positive action taken.

Respectfully submitted,

MERCHANT, GOULD, SMITH, EDELL,
WELTER & SCHMIDT, P.A.
3100 Norwest Center
90 South Seventh Street
Minneapolis, MN 55402–4131
(612) 332–5300

Date: July 28, 1998

Katherine M. DeVries Smith
Reg. No. P–42,157
KDS:PSTbkh